

FEBRUARY NEWS LETTER

San Francisco, February 3, 1953

ALL P.F.E. EMPLOYES:

P.F.E. Loadings

	1953			1952		
	<u>PFE Cars</u>	<u>Foreigns</u>	<u>Total</u>	<u>PFE Cars</u>	<u>Foreigns</u>	<u>Total</u>
January ..	32,238	3,015	35,253	28,757	2,773	31,530

CAR SITUATION: This shows very good performance with our own cars and, barring unfavorable weather conditions, should insure good return of PFEs to protect February loading without assistance of foreign empties. It is of utmost importance that we do this to the fullest extent, first of course from an earnings standpoint, and secondly to insure good turn around of PFEs to protect March loading. February estimated loading is 32,500 in round figures, or about the same as last year. March estimate, subject to change depending upon developments, of course, is about 2,500 cars higher than March last year.

Authority has been received to construct an additional 200 super-insulated cars, half of which will be equipped with mechanical refrigeration -- the type not yet determined.

CROP CONDITIONS - S.P.: Lettuce shipments are continuing heavy from Imperial Valley, averaging in the neighborhood of 200 cars daily, together with carrots and other vegetable shipments of 25 to 35 cars daily. This is expected to continue through the month of February. Tomatoes from the West Coast of Mexico are now moving in heavy volume and will continue for the next several months. Navel orange shipments from Southern California are increasing and will continue through the

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P.F.E. Earnings

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Total		Total		Total	

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Spring months. Celery continues to move from the San Diego area at about 25 cars daily.

T&NO: Continued unfavorable marketing conditions are holding shipments from the lower Rio Grande Valley below estimated figures.

CROP SITUATION ALONG UPRR: As expected, Idaho potato shipments increased sharply after the first of January and continued in heavy volume, under good demand and prices, through most of the month, dropping off the past week. It is felt that shipments will again increase in early February as growers' interest in selling may result from a heavier than usual breakdown in storage attributed to hot dry weather during harvest and rise in cellar temperatures. Mild winter to date did little to assist stored potatoes to lose heat rapidly enough, and expected percentage of Number One grade has not been retained. Onion shipments continue steady but similar unfavorable storage conditions will have bearing on shipments during February.

In all other districts shipments are expected to run steadily throughout the month at approximately the same volume as last year.

MECHANICALLY REFRIGERATED PFE CARS: A brief description of the new equipment and its operation is attached hereto.

K. V. PLUMMER

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MECHANICALLY REFRIGERATED THE CARS: A brief description of the new equipment and its operation is attached hereto.

K. V. BLUMMER

MECHANICAL REFRIGERATED P.F.E. CARS

In accordance with authority extended by its parent companies, the Southern Pacific and Union Pacific, Pacific Fruit Express Company recently completed construction of 75 new super-insulated cars of large (50 foot) size which are in continuous demand for frozen food loading. The same authorization also included 25 large super-insulated cars to embody the first mechanical refrigeration units in P.F.E. service (although a few cars so equipped have reached western territory under load from eastern origins). These first mechanical installations will consist of -

- 14 cars - Diesel-electric unit with compact cooling coil.
- 10 cars - Diesel-electric unit with large cooling coil.
- 1 car - Direct-drive unit with large cooling coil.

The 14 carsets of diesel-electric units with compact cooling coil manufactured by the Frigidaire Corporation follow the design in use on eastern lines and consist of a 2-cylinder 2-cycle 34 HP diesel engine direct-coupled to a 20 KW 220 volt alternator supplying electric power for two 5 HP compressor-motors and fans. Compressors will be of 2 cylinder upright type running at 750 RPM direct driven. The cooling coil will be compact, 14" deep x 60" wide x 12" high, fitted into an opening in the engine compartment bulkhead. It will consist of 3/4" copper tubing with fins spaced 4 per inch.

These 14 carsets will soon be installed in new cars constructed in PFE shops at Roseville. Cars will have 10 1/2" of insulation in the ceiling, 6" in the side walls and 7" in the floors. Side walls have a false wall of plywood spaced 1" from insulated wall, providing a flue or "air envelope" around the loading space. Latest improvements in car design are incorporated, including-

- 6 foot doors
- Easy riding trucks
- Rubber draft gears

As result of a very careful analysis of the problems involved in refrigeration of railway freight equipment by mechanical means, and numerous conferences with the refrigeration engineers on the staffs of manufacturers, PFE's consulting engineer, Mr. T. M. Elfving, has proposed the use of a large cooling or evaporator coil in 11 of the 25 cars. (In most other respects these 11 cars will be nearly identical with the first 14 mentioned above.) This coil will occupy the area of one entire end wall and will be located on the lading side of the insulated engine compartment bulkhead but protected by a false bulkhead. This coil will occupy an air space forming part of the car flue, this flue to be sealed reasonably tight from the lading space and in fact providing an "envelope" of sub-zero air surrounding the load. By this means it is expected that moisture (frost) accumulation on the cooling coil can be held to a point where defrosting enroute will not be necessary. This, it is hoped, will obviate the need for

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MECHANICAL EQUIPMENT AND P.T.E. CASE

In accordance with authority requested by the parent companies, the Southern Pacific and Union Pacific Pacific Express Company have recently completed construction of 75 new units. Installed cars of type (50 foot) size which are in continuous demand for frozen food loading. The same satisfaction also included 25 large super-insulated cars to embody the latest mechanical refrigeration units in P.T.E. service (although a few cars are required have reached western territory under load from eastern districts). These first mechanical installations will consist of -

- 14 cars - Diesel-electric unit with separate cooling coil.
- 10 cars - Diesel-electric unit with large cooling coil.
- 1 car - Direct-drive unit with large cooling coil.

The 14 cars of diesel-electric units with separate cooling coil manufactured by the Pullman Corporation follow the design in use on eastern lines and consist of a 2-cylinder 2-cylinder 30 HP diesel engine direct-coupled to a 20 HP 520 volt alternator supplying electric power for two 2 HP compressor-motors and 12 HP compressors. Will be of 2 cylinder upright type turning at 750 RPM direct driven. The cooling coil will be composed of 1 1/2" deep x 30" wide x 12" high. Rated into an opening in the engine compartment bulkhead. It will consist of 3/4" copper tubing with fins spaced 4 per inch.

These 14 cars will soon be installed in new cars now situated in the shops at Roseville. Cars will have 10' of insulation in the ceiling, 6" in the side walls and 7" in the floor. Side walls have a false half of plywood spaced 1" from insulated wall, providing a flow of "air envelope" around the loading space. Floors improve vents in car design are incorporated, including -

5 foot doors
Easy riding trucks
Rubber draft gears

As a result of a very careful analysis of the problems involved in refrigeration of railway freight equipment by mechanical means, and numerous conferences with the railway engineers on the basis of mechanical principles, P.T.E. consulting engineers, Mr. T. W. Elving, has proposed the use of a large cooling or evaporator coil in 11 of the 25 cars. (In most other respects these 11 cars will be nearly identical with the first 14 mentioned above). This coil will occupy the area of one side end wall and will be located on the loading side of the insulated compartment bulkhead but protected by a false bulkhead. This coil will occupy an air space forming part of the car floor, this line to be sealed reasonably tight from the loading space and in fact providing an "envelope" of subzero air surrounding the load. By this means it is expected that moisture (frost) accumulation on the cooling coil can be held to a point where defrosting amount will not be necessary. This, it is hoped, will obviate the need for

defrosting equipment; it will eliminate the chance of failure of the equipment controlling periodic defrosting. Further, sealing of the air space from the lading compartment will confine the refrigerated air circulation to the car flue and will eliminate the blast of freezing air interfering with men during loading and unloading. The proposed large cooling coil is a new adaptation to this type of refrigeration.

The 10 diesel-electric units will use a 30 HP 2-cylinder 4-cycle diesel engine driving a direct-coupled 15 KW 220 volt alternator. This unit will supply power for a 10 HP motor driving the 4 cylinder V-type compressor running at 1750 RPM, and for the air circulating fans. The cooling coil will be 10½" deep x 84" wide x 75" high, consisting of ¾ OD copper tubes with aluminum fins spaced 1" apart; surface approximately 1150 sq. ft.

The single direct-drive unit will consist of 30 HP diesel engine connected through electric clutch to the same type 4-cylinder compressor, with a small alternator belt-driven from the engine drive-shaft to provide power for the air circulating fans. Such a direct drive system promises substantial economies in first cost as well as operating cost and a greatly simplified layout. However, there are a number of fundamental problems to be worked out and purchase is therefore being confined to one unit.

After initial standing tests these cars will go into regular frozen food service.

This selection of designs for PFE cars has been worked out in an effort to develop the most reliable, efficient and practical refrigeration unit and will provide a good comparison of operating performances and a basis for developing information considered fundamental to future mechanical refrigeration progress. In this respect our first step in this form of transportation refrigeration may be considered pioneering. It is well known that mechanical units will produce almost any degree of low temperature that may be desired, but much remains to be learned of their maintenance costs, life in transportation service, and design modifications that will produce the most satisfactory railroad refrigerator.

These cars will probably start coming off the production line in March, and after some standing tests with the first car, will go into regular service. It is intended that one car will be accompanied by a representative of this office who will be familiar with operation of the unit, and will stop off at various points enroute "home" so that PFE employees may learn the operation and servicing of this equipment.

refrigeration equipment. It will eliminate the chance of failure of the equipment controlling periodic defrosting. The new design of the unit space from the existing equipment will contain the refrigerant and circulation to the car this and will eliminate the loss of liquid and gas entering with men during loading and unloading. The proposed new cooling coil is a new addition to this type of refrigeration.

The 40 diesel-electric units will use a 30 HP 2-cylinder A-cyclic diesel engine driving a direct-coupled 15 KW 280 volt alternator. This unit will supply power for a 10 HP motor driving the 4 cylinder V-type compressor running at 1750 RPM and for the air circulating fans. The cooling coil will be 10 ft deep x 4 ft wide x 75 ft high, consisting of 3/4 OD copper tubes with aluminum fins spaced 1" apart; surface approximately 150 sq. ft.

The single direct-drive unit will consist of 30 HP diesel engine connected through electric clutch to the same type alternator. With a small alternator belt-driven from the engine, power shall be provided for the air circulating fans. Such a direct drive system provides substantial economies in first cost as well as operating cost and a greatly simplified layout. However, there are a number of fundamental problems to be worked out and purchase is being held being confined to one unit.

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